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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/763,375	02/21/2001	Yukihiko Okumura	3815/118	4856

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EXAMINER	
ODOM, CURTIS B	

ART UNIT	PAPER NUMBER
2634	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/763,375	OKUMURA, YUKIHIKO	
	Examiner	Art Unit	
	Curtis B. Odom	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-80* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *52 and 53* is/are allowed.

6)☒ Claim(s) *9,20,25,34,45,50,51 and 61-80* is/are rejected.

7)☒ Claim(s) *1-8,10-19,21-24,26-33,35-44,46-49 and 54-60* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 February 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because it contains more than 150 words (see above). Correction is required. See MPEP § 608.01(b).

3. The disclosure is objected to because of the following informalities: In claim 6, line 17, "background noise)." is suggested to be changed to "background noise".

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Appropriate correction is required.

Claim Objections

5. Claims 5-7, 10-18, 21-24, 30-32, 35-43, and 46-49 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claims 5-7, 10-18, 21-24, 30-32, 35-43, and 46-49 have not been further treated on the merits.

6. Claims 1-5, 8, 9, 19, 20, 26, 27-29, 33, 34, 44, 45, and 54-80 are objected to because of the following informalities: The phrase "said decision result" is suggested to be changed to "a decision result". Appropriate correction is required.

7. Claims 8, 9, 19, 20, 33, 34, 44, 45, and 57-80 are objected to because of the following informalities: The phrase "the maximum likelihood decoding" is suggested to be changed to "a maximum likelihood decoding". Appropriate correction is required.

8. Claims 8, 9, 20, 33, 34, and 57-76 are objected to because of the following informalities: The phrase "the obtained maximum likelihood difference" is suggested to be changed to "an obtained likelihood difference". Appropriate correction is required.

9. Claim 45 is objected to because of the following informalities: The phrase "said means for determining" is suggested to be changed to "said means for deciding". Appropriate correction is required.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 9, 20, 25, 34, 45, 50, and 61-80 are rejected under 35 U.S.C. 102(e) as being anticipated by Okumura et al. (U. S. Patent No. 6, 108, 384).

Regarding claim 9, Okumura et al. discloses a data transmission method that puts variable length transmitted data into frames of a fixed time length and transmits these frames, comprising the steps of:

at a transmitting side,

calculating (Fig. 1A, block 4, column 10, lines 1-7) an error-detecting code of the transmitted data, frame by frame;

generating (Figs. 1A and 2A, block 6, column 10, lines 8-11) frame data containing the transmitted data, the calculated error-detecting code, and a tail bit such that the error- detecting code is arranged ahead of the corresponding transmitted data;

conducting (Fig. 1A, block 8, column 10, lines 13-22) error-correcting coding of the generated frame data with a convolutional code;

conducting (Fig. 1A, block 10, column 10, lines 13-22) interleaving of the frame data that has undergone the error-correcting coding; and

transmitting (Fig. 1, element 16, column 10, lines 35-43) the frame data that has undergone the interleaving, and

at a receiving side,

receiving (Fig. 1B, element 20, column 10, lines 52-55) the frame data;

conducting (Fig. 1B, block 24, column 10, lines 52-64) deinterleaving of the received frame data;

assuming (Fig. 1B, blocks 26, 30, 34, and 36, column 11, lines 14-41) a final bit position of the frame data, frame by frame, for the frame data that has undergone the deinterleaving, conducting error-correcting decoding thereof by a maximum likelihood decoding method up to the assumed final bit position, and at the assumed final bit position, calculating a likelihood difference between a maximum of likelihoods of a plurality of decoded data sequences that are candidates with respect to the transmitted data sequence and a likelihood of the decoded data sequence obtained by terminating the decoding with respect to the transmitted data sequence;

assuming (Fig. 1B, blocks 26, 30, 34, and 36, column 11, lines 14-41) the transmitted data and the error-detecting code by assuming the final bit position of the frame data, frame by frame, for the frame data that has undergone the error-correcting decoding, and calculating the error-detecting code of the assumed transmitted data;

deciding (Fig. 1B, block 34, column 11, lines 42-51) that among the assumed final bit positions of the frame data, a position where an obtained likelihood difference is

within a predetermined range and the assumed error-detecting code agrees with the error-detecting code calculated on the basis of the assumed transmitted data is the final bit position of the frame data; and

acquiring (column 11, line 51) the transmitted data on the basis of a decision result,

wherein the predetermined range regarding the likelihood difference at the step of deciding depends on the assumed final bit position of the frame data (column 12, lines 22-27).

Regarding claim 20, Okumura et al. discloses a data transmission method that puts variable length transmitted data into frames of a fixed time length and transmits these frames, comprising the steps of:

at a transmitting side,

calculating (Fig. 7A, block 4, column 10, lines 1-7) an error-detecting code of the transmitted data, frame by frame;

calculating (Figs. 7A, block 40, column 12, lines 53-64) transmission rate information indicating the number of bits of the transmitted data, frame by frame;

generating (Figs. 7A and 8A, block 6', column 10, lines 8-11 and column 12, lines 53-64) frame data containing the calculated transmission rate information, the transmitted data, the calculated error-detecting code, and a tail bit such that the error-detecting code is arranged ahead of the corresponding transmitted data;

conducting (Fig. 7A, block 8, column 10, lines 13-22) error-correcting coding of the generated frame data with a convolutional code;

conducting (Fig. 7A, block 10, column 10, lines 13-22) interleaving of the frame data that has undergone the error-correcting coding; and

transmitting (Fig. 1, element 16, column 10, lines 35-43) the frame data that has undergone the interleaving, and

at a receiving side,

receiving (Fig. 1B, element 20, column 10, lines 52-55) the frame data;

conducting (Fig. 1B, block 24, column 10, lines 52-64) deinterleaving of the received frame data;

assuming (Fig. 7B, blocks 26, 30, 34, and 36, column 11, lines 14-41) a final bit position of the frame data, frame by frame, for the frame data that has undergone the deinterleaving, and conducting error-correcting decoding thereof by a maximum likelihood decoding method up to the assumed final bit position

assuming (Fig. 7B, blocks 26, 30, 34, and 36, column 11, lines 14-41) the transmitted data and the error-detecting code by assuming the final bit position of the frame data, frame by frame, for the frame data that has undergone the error-correcting decoding, and calculating the error-detecting code of the assumed transmitted data;

deciding (Fig. 1B, block 34, column 11, lines 42-51) that among the assumed final bit positions of the frame data, a position where an obtained likelihood difference is within a predetermined range and the assumed error-detecting code agrees with the error-detecting code calculated on the basis of the assumed transmitted data is the final bit position of the frame data; and

acquiring (column 11, line 51) the transmitted data on the basis of a decision result,

wherein both the step of conducting the error-correcting decoding and the step of calculating the error-detecting code, first, assume the final bit position of the frame data on the basis of the transmission rate information in the received frame data, and if said step of deciding does not decide that the assumed position is the final bit position of the frame data (column 13, lines 5-27),

the step of conducting the error correcting decoding assumes the final bit position of the frame data, frame by frame, for the received frame data, conducts the error-correcting decoding thereof by the maximum likelihood decoding method up to the assumed final bit position, and at the assumed final bit position, calculates the likelihood difference between the maximum of likelihoods of a plurality of decoded data sequences that are candidates with respect to the transmitted data sequence and the likelihood of the decoded data sequence obtained by terminating the decoding with respect to the transmitted data sequence (column 11, lines 14-41),

both the step of conducting the error-correcting decoding and the step of calculating the error-detecting code assume a position other than the final bit position of the frame data assumed on the basis of the transmission rate information in the received frame data as the final bit position of the frame data (column 13, lines 18-27), and

the step of deciding decides that among the assumed final bit positions of the frame data, a position where the obtained likelihood difference is within the predetermined range and the assumed error detecting code agrees with the error-detecting

code calculated on the basis of the assumed transmitted data is the final bit position of the frame data (column 13, line 67-column 14, line 10),

the predetermined range regarding the likelihood difference at the step of deciding depends on the assumed final bit positron of the frame data (column 10, lines 22-27).

Regarding claim 25, which inherits the limitations of claim 9, Okumura et al. discloses the error-detecting code is a CRC code (column 10, lines 1-7).

Regarding claim 34, the claimed apparatus includes features corresponding to subject matter mentioned in the above rejection of claim 9 which is applicable hereto.

Regarding claims 45 and 50, the claimed apparatus includes features corresponding to subject matter mentioned in the above rejection of claims 20 and 25 which is applicable hereto.

Regarding claim 61, which inherits the limitations of claim 9, Okumura et al. further discloses at the transmitting side,

calculating (Figs. 7A, block 40, column 12, lines 53-64) transmission rate information indicating the number of bits of the transmitted data, frame by frame,

wherein the step of generating the frame data generates the frame data containing the calculated transmission rate information (Figs. 7A and 8A, block 6', column 10, lines 8-11 and column 12, lines 53-64), and

at the receiving side,

wherein both the step of conducting the error-correcting decoding and the step of calculating the error-detecting code assume the final bit position of the frame data on the basis of the transmission rate information in the received frame data (column 13, lines 5-27).

Regarding claim 62, which inherits the limitations of claim 61, Okumura et al. discloses wherein at the transmitting side, the step of conducting the error-correcting coding conducts, for the transmission rate information, independent error-correcting coding that is separate from the error-correcting coding for the transmitted data, the error-detecting code, and the tail bit (Fig. 10A, column 13, lines 53-60).

Regarding claim 63, which inherits the limitations of claim 62, Okumura et al. discloses wherein at the transmitting side, the step of conducting the error-correcting coding conducts the error-correcting coding of the transmission rate information by using a block code (Fig. 10A, column 13, lines 53-60).

Regarding claim 64, which inherits the limitations of claim 61, Okumura et al. discloses wherein at the transmitting side, the step of conducting the error-correcting coding conducts the error-correcting coding of all of the transmission rate information, the transmitted data, the error-detecting code, and the tail bit collectively with a convolutional code (column 10, lines 19-22).

Regarding claim 65, which inherits the limitations of claim 61, Okumura et al. discloses wherein at the receiving side, if the step of deciding does not decide that the final bit position of the frame data assumed on the basis of the transmission rate information in the received frame data is the final bit position of the frame data, both the step of conducting the error-correcting decoding and the step of calculating the error-detecting code assume a position other than the final bit position of the frame data assumed on the basis of the transmission rate information in the received frame data as the final bit position of the frame data (column 13, lines 5-27).

Regarding claim 66, which inherits the limitations of claim 9, Okumura et al. discloses wherein at the receiving side, if among the assumed final bit positions of the frame data exist a plurality of positions where the obtained likelihood difference is within the predetermined range and the assumed error-detecting code agrees with the error-detecting code calculated on the basis of the assumed transmitted data, the step of deciding decides that a position where the obtained likelihood difference becomes the minimum is the final bit position of the frame data (column 13, line 66-column 14, line 19).

Regarding claim 67, which inherits the limitations of claim 20, Okumura et al. discloses wherein at the receiving side, if among the assumed final bit positions of the frame data exist a plurality of positions where the obtained likelihood difference is within the predetermined range and the assumed error-detecting code agrees with the error-detecting code calculated on the basis of the assumed transmitted data, the step of deciding decides that a position where the obtained likelihood difference becomes the minimum is the final bit position of the frame data (column 13, line 66-column 14, line 19).

Regarding claims 68-70, which inherit the limitations of claim 20, the claimed method includes features corresponding to subject matter mentioned in the above rejection of claims 62-64, which is applicable hereto.

Regarding claims 71-76, which inherit the limitations of claim 34, the claimed apparatus includes features corresponding to subject matter mentioned in the above rejection of claims 61-66 which is applicable hereto.

Regarding claim 77, which inherits the limitations of claim 45, the claimed apparatus includes features corresponding to subject matter mentioned in the above rejection of claim 67 which is applicable hereto.

Regarding claims 78-80, which inherits the limitations of claim 45, the claimed apparatus includes features corresponding to subject matter mentioned in the above rejection of claims 62-64.

12. Claim 51 is rejected under 35 U.S.C. 102(e) as being anticipated by Rick (U. S. Patent No. 6, 272, 187).

Regarding claim 51, Rick discloses a transmitter that puts variable length transmitted data into frames of a fixed time length and transmits these frames, comprising:

means (column 1, lines 55-67) for calculating an error-detecting code of the transmitted data, frame by frame;

means (column 2, lines 1-29) for generating frame data containing the transmitted data and the calculated error-detecting code such that the error-detecting code is arranged after the corresponding transmitted data (column 5, lines 37-41) and bit arrangements of the transmitted data and of the error-detecting code are set in a reverse order (time reversed) to each other; and

means (column 6, lines 10-17, base station) for transmitting the generated frame data.

Allowable Subject Matter

13. Claims 1-4, 8, 26, 27, 28, 33, 44, and 54 are allowable over prior art (if above objections are overcome) because related references do not disclose arranging the error-detecting code after

the transmitted data, assuming the transmitted data and error-detecting code by assuming a final bit position, and deciding that a position where the assumed error-detecting code agrees with the error-correcting code calculated on the basis of the assumption is the final bit position.

Claims 29, 52, 23, and 55-60 and are allowable over prior art (if above objections are overcome) because related references do not disclose if a number of transmitted bits are zero, the calculation of the error-detecting code considers a previously-specified bit pattern to be the error-detecting code.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 571-272-3046. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Curtis Odom
October 27, 2004

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